**HOMEWORK: p. 338 #1, 5, 11, 14, 15, 20, 22 and p. 361 #2, 5**

**p.338**

1) (a) HH, HT, TH, TT yes, all equally likely

(b) 0, 1, 2, 3 no, not all equally likely

(c) H, TH, TTH, TTT no, not all equally likely

(d) 1, 2, 3, 4, 5, 6 yes, all equally likely

5) You can’t be due for anything!!! The law of large numbers just states that as the sample size increases, the

experimental probability gets closer to the theoretical probability. However you can have “streaks” of certain

outcomes.

11) (a) possible

(b) possible

(c) not possible. Over 1 (100%)

(d) possible

(e) not possible. Can’t have a negative probability.

14) The events are not disjoint. There are homes that have both a garage and a pool, so if we want to find the UNION (or), we need to know the intersection. Just adding 37% + 3% means we are double counting the homes that have both.

P(Garage) = 0.37 P(pool) = 0.03

P(Garage U Pool) = P(Garage) + P(pool) – P(garage pool)

15) The two cars are not independent. If one car is speeding, the car next to it is more likely to be speeding. Cars on highways tend to go similar speeds to the cars around them. So we would need a conditional probability.

20) P(Never) = 0.55 P(One) = 0.32 P(2+) = 0.13

1. P(2+) = 1 – 0.55 – 0.32 = 0.13
2. P(2+ or One) = 0.32 + 0.13 = 0.45 \*\* note: these events are disjoint, so you can just add
3. P(Never or One) = 0.87

22) (a) P(None None) = 0.55\*0.55 = 0.3025 \*\*note: these events are independent.

(b) P(at least one semester) = 0.45 P(at least one at least one) = 0.45\*0.45 = 0.2025

(c) P(having more than one semester of calculus) = P(2+) = 0.13

P(at least one student has had more than one semester) = P(at least one having 2+) =

= one student, the other student, or both students have had more than one semester (2+) =

= YN, NY, YY (the only outcome missing is NN, meaning neither student has had 2+)

= 1 – P(neither student has had 2+)

1 – P(2+c 2+c) = 1 – (0.87\*0.87) = 0.2431

**p. 361**

M

C

2) P(C) = 0.18 P(M) = 0.09 P(C M) = 0.04

0.05

0.14

0.04

1. P(C Mc) = 0.14

0.77

1. P(C U M) = 0.23
2. P(Cc  Mc) = 0.77

5) (a) P(US) = = 0.2025

(b) P(some HS U primary) = = 0.6965

(c) P(France U post-grad) = = 0.2404

1. P(France primary) = = 0.0402